

AUTOMATIC ROLLING FIFTH WHEEL HITCH

[0001] This application is a continuation of U.S. application Ser. No. 16/685,015, titled "Automatic Rolling Fifth Wheel Hitch," filed on Nov. 15, 2019 which is a continuation of U.S. application Ser. No. 15/368,952, titled "Automatic Rolling Fifth Wheel Hitch," filed on Dec. 5, 2016, now U.S. Pat. No. 10,479,425, which is a continuation of U.S. application Ser. No. 13/834,407, titled "Automatic Rolling Fifth Wheel Hitch," which was filed on Mar. 15, 2013, now U.S. Pat. No. 9,511,804, each of which are hereby incorporated by reference in their entirety.

FIELD OF INVENTION

[0002] The present invention relates generally to a fifth wheel hitch and, more particularly, to an automatically rolling fifth hitch for moving fifth wheel trailer in a predetermined manner in response to predefined movements.

BACKGROUND

[0003] The towing industry has developed a number of methods and apparatuses for securing a towed vehicle to a towing vehicle. One particularly prevalent towing apparatus is a fifth wheel hitch. The fifth wheel hitch is normally positioned in a load bed of a towing vehicle and secured either to the load bed or directly to the frame of the towing vehicle. A fifth wheel trailer typically includes a king pin that operatively couples the towed vehicle to the towing vehicle.

[0004] Fifth wheel hitches may normally be arranged such that the king pin is aligned over or near the rear axle and approximately equidistant between the rear wheels of the towing vehicle. Placing the king pin over the rear axle may also provide for sufficient clearance between the front edge of the trailer and the rear edge of the towing vehicle cabin when standard sized towing and towed vehicle are involved.

[0005] However, there are more towing vehicles on the market that include extended cabs having an expanded interior cargo volume. These extended cab towing vehicles, however, are typically built on a standard wheelbase chassis. This results in the load bed being shorter than standard towing vehicles. These shorter load beds result in the towing vehicles not having sufficient clearance between the axle and the rear of the cab to allow the towed vehicle to pivot appropriately.

[0006] Current prior art systems attempt to adapt fifth wheel trailers to short bed pickup trucks, but have shortcomings. For example, some systems use a hydraulically operated sliding base to force the hitch assembly rearward away from the towing vehicle cab. Such a system, however, is expensive and difficult to maintain. Further these systems often require operator intervention, which could make it generally ineffective.

[0007] Another prior art system uses a sliding base that requires the operator to exit the towing vehicle, unlock the base, lock the brakes on the towed vehicle and pull the towing vehicle forward. This temporarily moves the pivot point rearward so that the towed vehicle can pivot relative to the towing vehicle. However, before resuming normal operation, the operator must lock the towed vehicle brakes, back the towing vehicle towards the towed vehicle, again exit the towing vehicle and lock the sliding hitch. This is extremely inconvenient.

[0008] Still further, other prior art systems require sliding mechanisms on which the fifth wheel hitch engages to move the fifth wheel hitch rearward during certain conditions. These systems, however, may be subject to premature wear and constant maintenance. The sliding arrangement is often subject to accumulation of debris, which may negatively impact the overall function of the sliding arrangement. These sliding systems also utilize cam paths that are generally linear. These generally linear cam paths limit the distance the fifth wheel hitch may travel rearward during operation. Further still, these prior art systems may be limited in their stability, especially, from an operator's perspective.

[0009] Accordingly, there exists a need for an improved automatic fifth hitch assembly that allows towing vehicles with short load beds to effectively tow towed vehicles. Specifically, there is a need for an automatic fifth wheel hitch that is positionable to maintain the appropriate operative position of the towed vehicle relative to the towing vehicle that is robust, easy to maintain and does not require operator intervention. Further, there is a need for an automatic fifth wheel hitch assembly that is able to move rearward a greater distance to allow sufficient clearance between the towing vehicle cab and towed vehicle.

SUMMARY

[0010] A fifth wheel hitch is shown and described. The fifth wheel hitch may include a base frame configured to be secured to a load bed of a towing vehicle, a trolley operatively engaged with the base frame, the trolley adapted to move along the base frame between first and second positions, and a cam member attached with the base frame, the cam member having a cam path. The fifth wheel hitch may also include a cam follower coupled with the trolley, the cam follower operatively engaged with the cam path, and a fifth wheel head pivotally coupled with the trolley, where the trolley is moved between the first and second positions in response to pivoting of the fifth wheel head.

[0011] A fifth wheel hitch may include a base frame securable to a load bed of a towing vehicle, the base frame including a channel, a trolley having a plurality of rollers, the rollers operatively engaged with the channel, where the trolley is moveable between first and second positions with respect to the base frame, and a cam path, the cam path having a first portion. The fifth wheel hitch may also include a cam follower coupled with the trolley, the cam follower operatively engaging the first portion of the cam path, where pivoting of the cam follower releases the cam follower from the first portion permitting movement of the trolley fore and aft between the first and second positions.

[0012] A fifth wheel hitch may include a base frame securable to a load bed of a towing vehicle, the base frame including a channel, a trolley operatively engaged with the channel, where the trolley is positionable between first and second positions with respect to the base frame, and a fifth wheel head pivotally coupled to the trolley. The fifth wheel hitch may also include a cam path, the cam path having a first portion, and a cam follower coupled with the trolley and engaged with the cam path, where pivoting of the fifth wheel head moves the cam follower from the first portion causing the trolley to move between the first and second positions.

[0013] A fifth wheel hitch may include a base frame securable to a load bed of a towing vehicle, the base frame including a channel. The fifth wheel hitch may also include